



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 6 (Marks: 1)

The representation of reality in some physical form or in some form of mathematical equations may be discussed under the topic entitled as

Choices:

☐ Transportation problems

☐ Game theory

☐ Simulation

☐ Replacement problems

TIME LEFT

108



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: 5 (Marks: 1)

If the mean arrival and mean service rates are 4 and 7 respectively in a queue then expected waiting time in the system is

Choices:

☐ 1/3

☐ 28

☐ 3

☐ 7/4

TIME LEFT

109



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **5** (Marks: 1)

If the mean arrival and mean service rates are 4 and 7 respectively in a queue then expected waiting time in the system is

Choices:

☒ 1/3

☐ 28

☐ 3

☐ 7/4

TIME LEFT

109



Share



Favorite



Delete



Edit



More



The name of the method in getting the optimum assignment is

Choices:

Simplex method



North west corner method



Vogal approximation method



Hungarian method



TIME LEFT

109



Share



Favorite



Delete



Edit



More





Operations Research (MTH601)

Question: **52** (Marks: 5)

Write down the dual of the following Linear Programming problem;

$$\text{Min. } Z = 3x_1 + 4x_2 + 6x_3$$

Subject to:

$$x_1 + x_2 - x_4 \geq 10$$

$$-x_1 - x_2 + x_5 \leq -10$$

$$x_1 - x_3 = 0$$

$$x_2 + x_6 = 0$$

$$x_3 - x_7 = 0$$

$$x_1, x_3, x_4, x_5, x_6, x_7 \geq 0$$

Answer:



TIME LEFT

100



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **51** (Marks: 5)

Wild West produces two types of cow boy hats. Type 1 hat requires twice as much labor time as a type 2. If all the variable labor time is dedicated to type 2 alone, the company can produce a total of 400 type 2 hats a day. The respective market limits for the two types are 150 and 200 hats per day. The profit is Rs. 8 per type 1 and hat Rs. 5 per type 2 hat.

Formulate the above linear programming problem.

(Note: solution is not required)

Answer:



TIME LEFT

100



Share



Favorite



Delete



Edit



More





Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **50** (Marks: 5)

The cost of a new machine is Rs. 5000. The maintenance cost during the n th year is given by $M_n = 500 (n - 1)$, where $n = 1, 2, 3, 4, 5$. If the rate per year is 0.05, after how many years will it be economical to replace the machine by a new one?

Answer:



TIME LEFT

100



Share



Favorite



Delete



Edit



More





Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **49** (Marks: 5)

Check whether the given initial basic feasible solution is optimal or not.

0	2	1	6
5		1	
2	5	1	5
2		4	3
5	5	7	10

Answer:



TIME LEFT

100



Share



Favorite



Delete



Edit



More

Express the following Transportation problem(T.P) table into algebraic form with proper objective function and non-negative constraints

	D_1	D_2	D_3	Supply
O_1	c_{11}	c_{12}	c_{13}	5
O_2	c_{21}	c_{22}	c_{23}	3
O_3	c_{31}	c_{32}	c_{33}	10
Demand	4	6	8	

Answer:



TIME LEFT

100

Express the following Transportation problem(T.P) table into algebraic form with proper objective function and non-negative constraints

	D_1	D_2	D_3	Supply
O_1	c_{11}	c_{12}	c_{13}	5
O_2	c_{21}	c_{22}	c_{23}	3
O_3	c_{31}	c_{32}	c_{33}	10
Demand	4	6	8	

Answer:



TIME LEFT

100



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **47** (Marks: 3)

Draw a network diagram for the the following dependency relationship.

A and B control F; B and C control G.

Answer:



TIME LEFT

100



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **46** (Marks: 3)

A company has a machine whose cost is Rs. 30,000. Its maintenance cost and resale value at the end of different years are as given below:

Years.	1	2	3	4	5	6
Maintenance Cost.	4500	4700	5000	5500	6500	7500
Resale Value	27000	25300	24000	21000	18000	13000

Determine capital cost for each year.

Answer:



TIME LEFT

101



Operations Research (MTH601)

Question: **45** (Marks: 3)

Programmer s	A	B	C	D
1	30	10	0	10
2	0	10	40	0
3	0	30	20	0
4	0	0	0	10

Assign each job to each programmer.

Answer:



TIME LEFT

101

Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **44** (Marks: 2)

What are the key issues of inventory model? Also describe its objective.

Answer:



TIME LEFT

101



Share



Favorite



Delete



Edit



More





Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **43** (Marks: 2)

The cost of a new machine is Rs. 5000. The maintenance cost during the n th year is given by $M_n = \text{Rs. } 500 (n - 1)$, where $n = 1, 2, 3, \dots$. If the discount rate per year is 0.05, determine discount factor (v^{n-1}) for each year.

Answer:



TIME LEFT

101



Share



Favorite



Delete



Edit



More





5	0	2	1	6
	2	1	5	7
	2	4	3	7
5		5	10	

To find optimality condition, we use UV Multiplier Process.

Find a) $U_2 + V_2$

b) $U_3 + V_3$

Answer:



TIME LEFT

101



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **41** (Marks: 2)

	1	2	3	Supply
1	5	0	1	6
2		2	5	7
3		2	4	7
Demand	5	5	10	

What is the total shipping cost of the above table?

Answer:



TIME LEFT

101



Share



Favorite



Delete



Edit



More

Operations Research (MTH601)

Question: **40** (Marks: 1)

If shortage cost is infinity, then

Choices:

☐ no shortages are allowed

☐ no inventory carrying cost is allowed

☐ Ordering cost is zero

☐ Purchase cost = Carrying cost

TIME LEFT

101



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **39** (Marks: 1)

Many decision making problems involve a process that takes place in multiple stages in such a way that at each stage, the process is dependent on the strategy chosen. Such types of problems are called

Choices:

☐ Linear Programming problems

☐ Integer programming problems

☐ Dynamic programming problems

☐ Assignment problems

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **38** (Marks: 1)

Transportation problem is a special class of linear programming problem in which transport a commodity from the source to a destination in such a way that the total transportation cost is -----.

Choices:

☐ Zero

☐ Maximum

☒ Minimum

☐ Average

TIME LEFT

101



Share



Favorite



Delete



Edit



More





Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **37** (Marks: 1)

A primal's constraint equation produces _____ dual variable.

Choices:

☐ non basic

☒ an unrestricted

☐ artificial

☐ basic

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **36** (Marks: 1)

In the Simplex table, if the coefficient of non-basic variable says x_1 in the z -row is zero, then it indicates that value of z -----.

Choices:

☐ increase

☐ decreases

☐ does not change

☐ becomes infinity

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **36** (Marks: 1)

In the Simplex table, if the coefficient of non-basic variable says X_1 in the Z -row is zero, then it indicates that value of Z -----.

Choices:

☐ increase

☐ decreases

☐ does not change

☐ becomes infinity

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Consider the following simplex table corresponding to the maximization problem

Basic	x_1	x_2	x_3	x_4	A_1	A_2	R.H.S
Z	0	0	$M + 1/2$	M	$16M - 11$	0	$-0.6M - 5.7$
x_1	1	0	5	0	-1	0	3
x_2	0	1	-5	0	3	0	9
A_2	0	0	-1	-1	-0.6	1	0.6

This is the indication that problem has-----.

Choices:

☐ infeasible Solution

☐ temporarily Degenerate Solution

☐ unbounded Solution

☐ degenerate Solution

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Consider the following simplex table corresponding to maximization problem

Basic	x_1	x_2	x_3	S_1	S_2	S_3	R.H.S
Z	-4	-3	-2	0	0	0	0
x_1	0	0	1	1	0	0	8
S_2	-2	1	3	0	1	0	9
S_3	0	2	1	0	0	1	3

Then this is the indication that

Choices:

☐ Problem has Unbounded Solutions

☐ Problem has Infeasible Solutions

☐ Problem has temporarily degenerate

☐ Problem has Multiple Optimal Solutions

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Consider the following simplex table corresponding to maximization problem

Basic	x_1	x_2	x_3	S_1	S_2	S_3	R.H.S
Z	-4	-3	-2	0	0	0	0
x_1	0	0	1	1	0	0	8
S_2	-2	1	3	0	1	0	9
S_3	0	2	1	0	0	1	3

Then this is the indication that

Choices:

☐ Problem has Unbounded Solutions

☐ Problem has Infeasible Solutions

☐ Problem has temporarily degenerate

☐ Problem has Multiple Optimal Solutions

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 3 (Marks: 1)

In sequencing problems, the Johnson's algorithm in finding the optimal ordering of n jobs through 3 machines can be applied, if the problem is converted into following number of machines problems

Choices:

☒ $3n$

☐ $3n!$

☐ $2 \times 3 = 6$

☐ 2

TIME LEFT

111



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **33** (Marks: 1)

For a linear programming problem, the Unboundedness is related to which of the following?

Choices:

☐ Solution space only

☒ Objective value only

☐ Neither to solution space nor to objective values

☐ Both solution space and objective value

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 32 (Marks: 1)

If the degeneracy arises in the initial stage, then which of the following is true?

Choices:

- ☐ One of the basic variables is zero.
- ☐ More than one variable is eligible to leave the basis.
- ☐ Tie in the ratio of each row, by taking right hand side of each row and dividing by the corresponding element of the key column.
- ☐ Iterative Cycling of basic solution exists without reaching the optimality.

TIME LEFT

101

Edit



Share



Favorite



Delete



Edit



More

If the degeneracy arises in the initial stage, then which of the following is true?

Choices:

- ☐ One of the basic variables is zero.
- ☐ More than one variable is eligible to leave the basis.
- ☐ Tie in the ratio of each row, by taking right hand side of each row and dividing by the corresponding element of the key column.
- ☐ Iterative Cycling of basic solution exists without reaching the optimality.

TIME LEFT

101

Operations Research (MTH601)

Question: **31** (Marks: 1)

If the problem has a _____ solution such that the minimum value of the objective function is zero along with zero values of artificial variables. Then proceed to phase II method.

Choices:

☐ unbounded

☒ feasible

☐ non feasible

☐ de-generate feasible solution

TIME LEFT

101



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **30** (Marks: 1)

Min. $Z = 0$ and no artificial variable appears in the basic variables. _____ solution to original problem has been found and we proceed to phase II method.

Choices:

☐ A basic feasible

☐ An optimal

☒ An infeasible

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 27 (Marks: 1)

If the objective function of a linear programming problem needs further improvement then which of the following will have to proceed?

Choices:

- ☐ a new decision variable to be entered and other decision variable to leave the basis
- ☐ a new slack variable to be entered and other slack to leave the basis
- ☐ a new non-degenerate variable to be entered and other non-generate to leave the basis
- ☐ a new basic variable to be included and other basic variable to leave the basis

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **28** (Marks: 1)

The constrained $3x_1 + 2x_2 \leq 18$ in standard form can be written as:
(Where R is artificial variable and S_1 is Slack variable)

Choices:

☐ $3x_1 + 2x_2 + S_1 + R = 18$

☐ $3x_1 + 2x_2 + S_1 - R = 18$

☐ $3x_1 + 2x_2 - S_1 + R = 18$

☐ $3x_1 + 2x_2 + S_1 = 18$

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **29** (Marks: 1)

If no _____ variable appears in the basis and the optimality conditions are satisfied, then the current solution will be optimal one.

Choices:

☐ artificial

☒ non basic

☐ slack

☐ surplus

TIME LEFT

101



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 25 (Marks: 1)



Choices:

☐ $x+2y \leq 3$

☐ $x+2y \geq 3$

☐ $x-2y \leq 3$

☐ $x-2y \geq 3$

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **26** (Marks: 1)

It is a property of simplex method that there always exist infinite numbers of basic feasible solutions.

Choices:

☒ True

☐ False

TIME LEFT

102



Share



Favorite



Delete



Edit



More

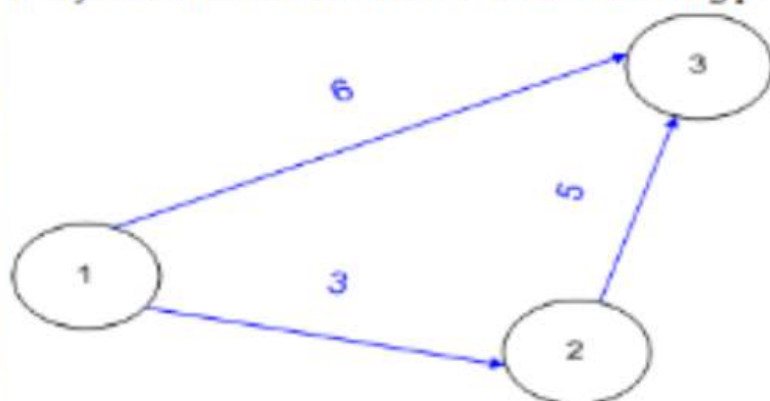




Operations Research (MTH601)

Question: **24** (Marks: 1)

Early finish time of the event '3' in the following project is -----.



Choices:

☐ 14 days

☐ 2 days

☐ 8 days

☒ 6 days

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 2 (Marks: 1)

During a replacement if the value of money decreases at the rate of 3% then the present worth factor of unit amount to be spent after one year is given by

Choices:

0.25



0.333



0.9708



4



TIME LEFT

112



Share



Favorite



Delete



Edit



More





Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **23** (Marks: 1)

Which of the following give the excess of available time over the activity time when all jobs start as early as possible?

Choices:

☐ Total float

☐ Free float

☐ Independent float

☐ Early finish times

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **22** (Marks: 1)

Let FS = Free Slack, TS = Total Slack, INDS = Independent Slack, we have the relations

- I. $TS \leq FS$
- II. $INDS \leq FS$
- III. $FS \leq TS$

Then which relation is true

Choices:

☐ Only I

☐ Only II

☐ Only III

☐ Only I & II

☒ Only II & III

TIME LEFT

102



Share



Favorite



Delete



Edit



More

Operations Research (MTH601)

Question: **19** (Marks: 1)

In replacement Models, Capital Cost = (Item / Machine Cots) – (-----).

Choices:

☒ Resale Cost

☐ Running Cost

☐ Maintenance Cost

☐ Operating Cost

TIME LEFT

102



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **19** (Marks: 1)

In replacement Models, Capital Cost = (Item / Machine Cots) – (-----)

Choices:

☒ Resale Cost

☐ Running Cost

☐ Maintenance Cost

☐ Operating Cost

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: **19** (Marks: 1)

In replacement Models, Capital Cost = (Item / Machine Costs) - (-----).

Choices:

☐ Resale Cost

☐ Running Cost

☐ Maintenance Cost

☐ Operating Cost

TIME LEFT

102



Share



Favorite



Delete



Edit



More



If " N_i " be the Number of replacement made at the end of the i^{th} week and " P_j " be the probability of failure during the i^{th} week, then $N_j =$ -----.

Choices:

☐ $N_0P_2 + N_1P_1$

☐ $N_0P_1 + N_1P_2$

☐ $N_0P_2 + N_1P_2$

☐ $N_1P_2 + N_1P_1$

TIME LEFT

102



Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **17** (Marks: 1)

In assignment problem, each job requires exactly one resource.

Choices:

True



False



May not be true



TIME LEFT

102

Share



Favorite



Delete



Edit



More

Operations Research (MTH601)

Question: **15** (Marks: 1)

Which of the following binary operation in assignment problem among all the elements in the given profit matrix from the highest element in the matrix

Choices:

☒ Subtraction

☐ Division

☐ Multiplication

☐ Addition

TIME LEFT

103

Which of the following binary operation in assignment problem among all the elements in the given profit matrix from the highest element in the matrix

Choices:

☒ Subtraction

☐ Division

☐ Multiplication

☐ Addition

TIME LEFT

103

Which of the following binary operation in assignment problem among all the elements in the given profit matrix from the highest element in the matrix

Choices:

☐ Subtraction

☐ Division

☐ Multiplication

☐ Addition

TIME LEFT

103



Operations Research (MTH601)

Question: 1 (Marks: 1)

Under the individual replacement policy an item is replaced on its

Choices:

Success



Failure



Maximum utilization



Minimum utilization



TIME LEFT

112

Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **14** (Marks: 1)

The name of the method in getting the optimum assignment is

Choices:

☐ Simplex method

☐ North - West corner method

☐ Vogel's approximation method

☐ Hungarian method

TIME LEFT

103

Share



Favorite



Delete



Edit



More



The name of the method in getting the optimum assignment is

Choices:

☐ Simplex method

☐ North - West corner method

☐ Vogel's approximation method

☐ Hungarian method

TIME LEFT

103

Share



Favorite



Delete



Edit



More



Operations Research (MTH601)

Question: **14** (Marks: 1)

The name of the method in getting the optimum assignment is

Choices:

☐ Simplex method

☐ North - West corner method

☐ Vogel's approximation method

☐ Hungarian method

TIME LEFT

103

Share



Favorite



Delete



Edit



More



The name of the method in getting the optimum assignment is

Choices:

☒ Simplex method

☐ North - West corner method

☐ Vogel's approximation method

☐ Hungarian method

TIME LEFT

103



Share



Favorite



Delete



Edit



More

Source	Destinations				Supply
		D1	D2	D3	
	S1	5	1	2	
	S2	7	2	4	
	S3	3	3	5	
	Demand	10	20	20	

Choices:

10



15



25



5



TIME LEFT

106



Operations Research (MTH601)

Question: **11** (Marks: 1)

If a basic feasible solution contains less than " $m + n - 1$ " (Here m is the number of rows, n is the number of columns in transportation problem) non negative allocation, then it is said to be

Choices:

☐ Degenerate

☐ Multiple Solutions

☐ Non degenerate

☐ Alternative Optima

TIME LEFT

106

Operations Research (MTH601)

Question: 10 (Marks: 1)

The Vogel Approximation method is an iterative procedure for computing a _____ solution of the transportation problem.

Choices:

☒ basic feasible

☐ non basic feasible

☐ basic infeasible

☐ optimal

TIME LEFT

107



Virtual University Overseas Examination System V2.0 (x64)

Operations Research (MTH601)

Question: 9 (Marks: 1)

CPM can help you figure out EXCEPT:

Choices:

☐ how long your complex project will take to complete

☐ which activities are "critical," meaning that they have to be done on time or else the whole project will take longer

☐ what is the most costly way to speed up the project

☐ you can try to speed up the project

TIME LEFT

107



Share



Favorite



Delete



Edit



More

Operations Research (MTH601)

Question: 8 (Marks: 1)

Search and cutting methods are used to solve following types of problems

Choices:

☐ Transportation

☐ Assignment

☒ Integer Programming

☐ Queuing problems

TIME LEFT

108

Transportation technique or the simplex method cannot be used to solve the assignment problem because of

Choices:

☐ Degeneracy

☐ Involvement of dummy activities

☐ Looping among the entries of assignment matrix

☐ Inequilibrium between demand and supply

TIME LEFT

108

Under the individual replacement policy an item is replaced on its

Choices:

Success



Failure



Maximum utilization



Minimum utilization



TIME LEFT

112